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## **Professional Vision and Reflections of Qualified and Non-qualified Biology Teachers**

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# **Professional Vision and Reflections of Qualified and Non-qualified Biology Teachers**

This paper shows the differences in the aiming of the professional vision of qualified and non-qualified biology teachers ( $n = 6$ ). Teachers wrote two reflections; the first was made 24 hours after teaching, the second was made within 14 days with the support of the video. Both reflections were analysed using the qualitative approach. They were divided into units and were coded according to Sherin and van Es (2009). Qualified teachers described less, evaluated more, and theorized more when they observed their lessons. They also noticed the specific phenomena more. For unqualified teachers we cannot see this shift so there is room for mentors. Both groups increased the amount of alterations in post reflections. Alterations could be divided into four areas; time management, communication of teacher, use of teaching aids, and activation of pupils. Both groups paid less attention to biology and didactics of biology in reflections supported by video.

Keywords: alterations of phenomena, biology lessons, professional vision, reflections

## **Introduction**

Currently, the pedagogical community tends to direct teachers to professionalism (Janík, 2009). In recent years there has been a growing interest in this issue, which is due to the need to improve the quality of education and educational institutions (Píšová, 2010).

If we want to deal with professionalism of teachers, we have to focus on the characteristics of this profession, alongside the ability of professional vision (Minaříková & Janík, 2012).

According to Sherin and van Es (2009), professional vision means the ability of noticing and interpreting significant features of classroom interactions. Videos of lessons provide a look at the entire classroom environment and do not require immediate response from the observer (future teacher). Furthermore, the video of the lesson is considered as a key source of successful support for the development of noticing skills (Sherin & Russ, 2014).

Video studies can provide an impetus for empirical research as they better document and analyse complex pedagogical and didactic phenomena and processes (Janík & Najvar,

2008). They also allow analysis of the process of refreshing content by a student in a social situation influenced by a teacher and studying phenomena in educational reality (Najvar, 2011). The evidence of the benefits of video was found in an enumeration of positive changes in reflections. Those reflections were more meaningful (Calandra, 2014).

One of the first definitions of reflection in the process of learning defines reflection as an active, persistent, and thorough consideration of belief, or the supposed possibility of a shift in knowledge, which supports and leads to the conclusion that closes the reflection (Tripp & Rich, 2012). Each teacher should go through the reflection process. However, this must first be learned (Janík, 2005). From research (Píšová, 2005) it is obvious that changes in the thinking about the videos of their own lessons occurred in students after a year-long teaching practice.

The aim of this paper is to show differences in the aiming of the professional vision at reflections of qualified and non-qualified biology teachers. The focus on these groups of respondents is because of the fact that the researchers' attention which examine this topic has not been written about enough and there is still much to discover in this field. In addition, there is a possibility that teachers who are not sufficiently qualified yet can teach the biology subject at schools (if they study to be qualified at the same time). Because of this fact, which is very often also the reality, we have started to find out how these groups are different in achieving the development of professional vision.

Three main research questions were determined:

- (1) What are the changes in focus of professional vision in qualified biology teachers after watching their video compared to non-qualified teachers?
- (2) Does watching of the video increase the number of suggested alterations?
- (3) What are the alterations they focused on?

## **Materials and methods**

Six respondents were examined - three respondents were un-qualified and three were qualified. All of them taught biology (in Czech) at lower secondary schools. Non-qualified teachers do not yet have the required education and were studying for a Masters degree (Teaching Training for Secondary School – Biology) at Charles University, Faculty of Education. They were able to teach due to the exception given by the law in the Czech Republic.

Examiners were asked to video-record their lesson. After the lesson they had to write a pre reflection within 24 hours after teaching. They were then asked to watch the footage of their lesson and were asked to write a new reflection (post reflection), which would be submitted within 14 days after teaching the lesson.

The reflections were split into units and were coded according to the categorical system published by Sherin and van Es (2009). Every unit of meaning was assigned to one category in the four dimensions of the analysis, see Table 1. At the same time, suggested Alterations (“What to do differently in teaching”) in statements were identified.

## Results and discussion

In Table 1 we can see a comparison of absolute and relative frequencies of codes in pre and post reflections in both groups of respondents.

	Non-qualified teachers, n=3		Qualified teachers, n=3	
Categories	Pre reflection	Post reflection	Pre reflection	Post reflection
	Abs.   rel. freq.	Abs.   rel. freq.	Abs.   rel. freq.	Abs.   rel. freq.
Actor				
Teacher	2   3.28 %	0   0.00 %	0   0.00 %	2   5.41 %
Student	13   21.31 %	8   21.62 %	13   26.53 %	6   16.22 %
Self	28   45.90 %	18   48.65 %	21   42.86 %	20   54.05 %
Curriculum	4   6.56 %	3   8.11 %	9   18.37 %	3   8.11 %

Other	14   22.95 %	8   21.62 %	6   12.24 %	6   16.22 %
Topic				
Subject	7   11.48 %	2   5.41 %	3   6.12 %	1   2.70 %
Pedagogy	22   36.07 %	17   45.95 %	25   51.02 %	18   48.65 %
Climate	11   18.03 %	3   8.11 %	7   14.29 %	3   8.11 %
Management	9   14.75 %	4   10.81 %	8   16.33 %	8   21.62 %
Other	12   19.67 %	11   29.73 %	6   12.24 %	7   18.92 %
Stance				
Describe	8   13.11 %	12   32.44 %	16   32.65 %	5   13.51 %
Evaluate	25   40.98 %	10   27.03 %	20   40.82 %	20   54.05 %
Interpret	28   45.90 %	15   40.54 %	13   26.53 %	12   32.43 %
Specificity				
Specific	5   8.20 %	2   5.41 %	2   4.08 %	12   32.43
General	56   91.80 %	35   94.59 %	47   95.92 %	25   67.57 %

Table 1. Comparison of frequencies of codes in both groups (source: own calculation)

There are some categories in which the changes are very positive in post-reflections. It seems that video helps, especially for qualified teachers. There is a bigger shift, especially in the ‘Stance’ and ‘Specificity’ dimensions.

In post-reflections, qualified teachers focused more on the ‘Self’ category compared to pre-reflections. On the contrary there were more references to the ‘Student’ and ‘Curriculum’ categories in pre-reflections.

The category ‘Subject’ is rarely mentioned in the statements of both groups, in both pre and post-reflections.

The category ‘Pedagogy’ has increased in the total amount of statements in post-reflections in non-qualified teachers. The reason could be that these phenomena, which we

coded as pedagogical, could be very easily identified by un-qualified teachers after watching the video. Suddenly they discovered it with the video's help. The qualified teachers, it seems that they already saw it even without the video. Categories 'Subject', 'Climate' and 'Management' were less commented on in post-reflections by non-qualified teachers. Qualified teachers focused more on 'Management' statements in post-reflections. 'Subject', 'Pedagogy' and 'Climate' statements declined in post-reflections.

Qualified teachers used more statements for 'Evaluate' and 'Interpret' in post-reflections. They used 'Describe' statements more in pre-reflections. For non-qualified teachers it seems that video did not help them too much. It is important to note that qualified teachers changed their attitudes after watching their own videos. They 'Describe' less and 'Evaluate' and 'Interpret' more than in pre-reflections. They also pay more attention to 'Specific' phenomena in teaching. Therefore, it makes sense to use the videos even with a longer-tenured teacher. For those not yet qualified teachers, we do not see this shift. They rather describe it in post-reflections. There is room for mentor practice at the college or mentor at school.

As previously said, qualified teachers were more specific when using statements in post-reflections. Non-qualified teachers were more specific when they wrote their pre-reflections.

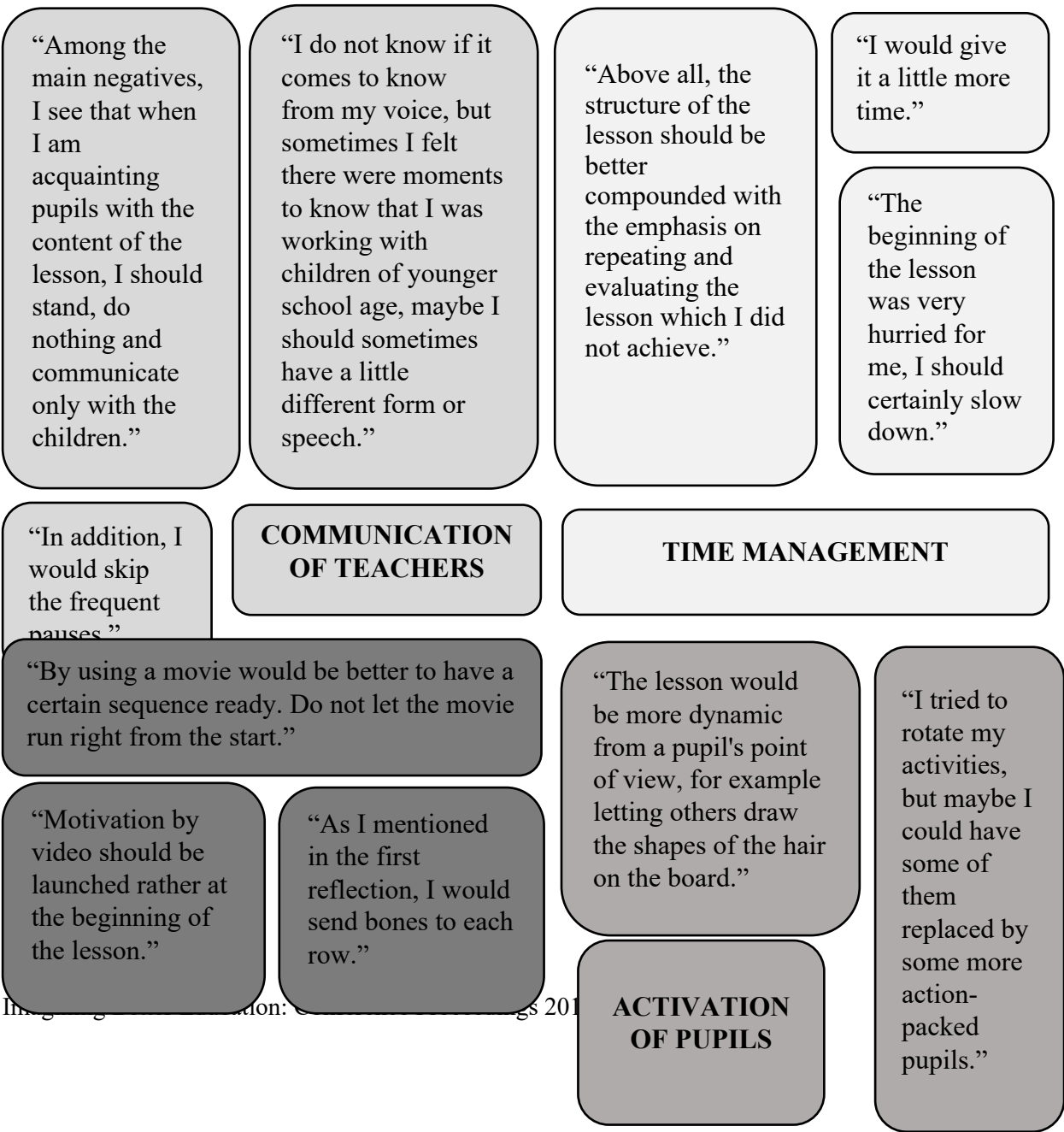
The ability to suggest alternative approaches to teaching is very important for teachers. This phenomenon is also highlighted in written reflections (Table 2).

Category	Non-qualified (group 1), n=3		Qualified teachers (group 2), n=3	
	Pre reflection Abs.   rel. freq.	Post reflection Abs.   rel. freq.	Pre reflection Abs.   rel. freq.	Post reflection Abs.   rel. freq.
Alteration	2   3.28 %	5   13.51 %	0   0.00 %	7   18.92 %

Table 2. Comparison of pre and post-reflections of non-qualified teachers and qualified teachers – alterations (source: own calculations)

Both groups of respondents increased the number of comments which identified some alterations in post-reflections, seen in Table 2. The differences are quite big, which is considered as a very important index. That is the reason some examples of those comments from post-reflections are quoted. See Figure 1.

In the post-reflections of both groups of teachers, we can see these categories of alterations: teacher communication (unscripted words, talking to pupils as though they were little children), time management, working with aids (film, motivational video), activation of pupils





## TEACHING AIDS

Figure 1. Categories in post-reflections with examples (source: own data gathering)

### Conclusion

The study shows the effect of watching one's video on making changes in professional vision, which can be useful for professional development of student teachers and teachers. We can take these identified aspects into account when developing the content of didactics of biology in Faculties of Education in the Czech Republic. The research constraint is that a low number of respondents were asked. The reason for such a low number of respondents is that just three of all the student teachers who were examined have been teaching for two or more years. On the other hand, we also found just three qualified teachers who were willing to be part of this research. We expected that this number is not enough, but it still gives us some information which we can examine more with a larger amount of respondents in the future.

As a positive effect of video, we can see an increase of comments by qualified teachers in the categories of 'Self', 'Management', 'Evaluate', 'Interpret' and 'Specific'.

On the other hand, there is no effect of video on non-qualified teachers. It means that watching the videos is not enough, and the mentor intervention is needed.

Both groups had a low rate of the 'Subject' category, which means that they are not focused on the subject and subject didactic in pre and even post-reflections. The recommendations for the further research could be to focus specifically on quality of some other category e.g. evaluate comments of participants and some examples of these comments.

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